

REMARKS

Entry of the foregoing, re-examination and reconsideration of the subject matter identified in caption, as amended, pursuant to and consistent with 37 C.F.R. §1.112, and in light of the remarks which follow, are respectfully requested.

By the foregoing amendment, the specification has been amended to provide additional antecedent basis for the features of claims 2, 3, 7, 8, 17 and 18. Claims 16-20 have been amended to clarify the recitation of the “reduced lead content aviation gasoline”. New claims 21-29 are added to provide coverage for the claimed features and are supported by the Specification.

Turning now to the Official Action, the Specification has been objected to as allegedly failing to provide antecedent support for the features of claims 2, 3, 7, 8, 11, 17 and 18. Applicants respectfully disagree for at least the following reasons.

The motor octane number values recited in each of claims 2, 3, 7, 8, 17 and 18 are actually recited in the paragraph beginning at line 11 on page 7. These values are based upon the phrase “high motor octane number” which is used to describe the Avgas composition of the invention (see, e.g., page 7, lines 3-4). As such, the Specification does actually provide antecedent support for the features of these claims.

Nonetheless in the interest of complying with the Examiner's comments, the paragraph beginning at line 11 of page 7 has been amended to better provide antecedent support for this aspect of the claimed invention.

With regard to claim 11, it is respectfully noted that antecedent support for the claimed method in the Specification may be found at least in the paragraph beginning at line 10 of page 6.

For at least the foregoing reasons, withdrawal of the objections to the Specification is requested.

Claims 1-20 further stand rejected under 35 U.S.C. §112, second paragraph, as being allegedly indefinite. These rejections are respectfully traversed for at least the following reasons.

In the Official Action, it is asserted that the term “high” is a relative term that does not have a comparative value. Applicants respectfully disagree.

The term “high” as it appears in the preamble is intended to be a descriptive term which does not explicitly limit the claimed aviation gasoline composition to a specific motor octane number (MON). One skilled in the art would understand this term such that the meaning of the claims is clear.

In addition, Applicants have referred to this term in the specification (e.g. at page 7, lines 6-8) such that, when read in light of the specification, the meaning of this term would be clear to one skilled in the art.

It is also noted that claims 2, 3, 7, 8, 12, 13, 17 and 18 recite that the aviation gasoline has a motor octane number (MON) of at least about 98, or at least about 100. Since specific MON values are recited in these claims, no possible confusion exists as to the MON value of the claimed aviation gasoline, or the MON value of the aviation gasoline according to the claimed methods.

If the Examiner would prefer, Applicants would be willing to include in the claims the feature “wherein said aviation gasoline has a motor octane value greater than about 98”, if necessary.

With regard to claim 16, it is noted that toluene may be an optionally added component, provided the Avgas contains the recited amount of toluene, since the optional toluene may be

added to meet the recited content of toluene. That is to say, the Avgas may already contain some toluene such that further toluene may be added to meet the claimed content range, if necessary or desired.

For at least the foregoing reasons, the meaning of the claims is clear. Withdrawal of the second paragraph rejections is requested.

The present invention relates to fuels, particularly aviation gasoline (Avgas) formulations, which contain reduced amounts of tetraethyl lead. More specifically, the present invention relates to an aviation gasoline formulation possessing a high motor octane number which contains reduced amounts of tetraethyl lead and a method of economically making the aviation gasoline formulation. As set forth in the claims, the Avgas composition contains reduced amounts of tetraethyl lead and comprises about 20 to about 80 vol% iso-octane, about 5 to about 18 vol% toluene, about 1 to about 20 vol% C₄ to C₅ paraffins, about 0 to about 1 ml tetraethyl lead/gallon of said aviation gasoline composition and the balance comprising light alkylate.

Claims 1-20 stand rejected under 35 U.S.C. §102(b) as being allegedly anticipated by WO 9822556 (WO'556). Applicants respectfully traverse these rejections for at least the following reasons.

WO'556 relates to an unleaded aviation fuel composition having a motor octane number of at least 98 comprising triptane and at least one other saturated aliphatic hydrocarbon having from 5 to 10 carbon atoms. The composition is stated to contain at least 30% by volume of the total composition of a hydrocarbon according to a specified formula, such as triptane or 2,2,3-trimethylpentane.

As set forth in MPEP §2131, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art

reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). “The identical invention must be shown in as complete detail as is contained in the ... claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Further, as stated in MPEP §2131.03, “[i]n order to anticipate the claims, the claimed subject matter must be disclosed in the reference with ‘sufficient specificity to constitute an anticipation under the statute’”.

In the present case, Applicants respectfully submit that the claimed invention is not anticipated within the meaning of the statute for at least the following reasons.

The aviation fuel composition of WO’556 is disclosed to be an unleaded fuel composition whereas Applicants’ claimed invention recites that the composition contains “reduced amounts of tetraethyl lead”. WO’556 is completely silent with regard to the possible inclusion of a lead component, such as tetraethyl lead, and, in actuality, the presence of lead in such a composition would be contrary to its being an unleaded aviation fuel. The skilled artisan would not likely consider an unleaded aviation fuel according to WO’556 to be the same thing as an aviation fuel containing reduced amounts of tetraethyl lead to constitute an anticipation within the meaning of 35 U.S.C. § 102.

While this distinction alone is sufficient to distinguish the claims over WO’556, (notwithstanding the recitation of amounts of tetraethyl lead of “about 0 to about 1 ml tetraethyl lead/gallon of aviation gasoline), new claims 21-24 have been added to more clearly recite the presence of reduced amounts of tetraethyl lead. As such, these new claims are further allowable for at least this reason.

Applicants also note that the key component in WO’556 is triptane or 2,2,3-trimethylpentane (see, e.g., formula (I) and the accompanying text describing component (a) at page 2).

These components are not required by Applicants' aviation fuel, are not claimed, and are not actually mentioned in their Specification. In addition, Applicants note that triptane is not generally produced in refinery processes, except possibly in trace amounts. As well, 2,2,3-trimethylpentane may be a product of alkylation and is generally only a minor component of Avgas (perhaps present in amounts of about 1%). By comparison, the unleaded aviation fuel of WO'556 contains at least 30% by volume of the total composition of a hydrocarbon according to formula (I), i.e. triptane or 2,2,3-trimethylpentane. Such amounts are much greater than may be present in Applicants' aviation gasoline as a possible contaminant or by-product of an alkylation or other process operation.

In the Official Action, it is further asserted that "all the material limitations of the claims" are taught. Applicants respectfully disagree for the reasons noted above and as follows.

The present claims recite the presence of specific amounts of iso-octane, toluene, C₄ to C₅ paraffins, and tetraethyl lead/gallon of aviation gasoline composition with the balance comprising light alkylate. Specifically these ranges are:

about 20 to about 80 vol% iso-octane,

about 5 to about 18 vol% toluene,

about 1 to about 20 vol% C₄ to C₅ paraffins,

about 0 to about 1 ml tetraethyl lead/gallon of said aviation gasoline composition, and

the balance comprising light alkylate.

WO'556 does not disclose these specific ranges or the combination of ranges with "sufficient specificity" to constitute an anticipation within the meaning of the statute. Instead, as noted, WO'556 requires the presence of at least 30% by volume of the total composition of a hydrocarbon according to formula (I), such as triptane or 2,2,3-trimethylpentane. Further,

although a ratio of triptane, iso-pentane and iso-octane is disclosed at page 5 (as noted in the Official Action at page 3), these ratios do anticipate the above ranges of amounts according to Applicant's claims.

As well, the possibility that up to 30% by volume of an aromatic liquid hydrocarbon such as toluene may be present is not sufficient to anticipate Applicants' claims. Specifically, the disclosure at page 5, lines 24-26, wherein a composition containing "50-95% e.g. 50-80% triptane, 5-25% e.g. 10-25% component (b) e.g. isopentane and 5-30%, for example toluene" is recited also does not anticipate the claims and actually teaches away from the claimed ranges since triptane is the major component.

Example 1 (page 6 of WO'556) has also been relied upon in the Official Action to allegedly demonstrate anticipation of the claims. However, the unleaded gasoline of this example is stated to consist of 40 volume % 2,2,3 trimethylbutane, 12 volume % isopentane and 48 volume % iso-octane. Based upon this information, Applicants' claims are not anticipated since each of the components, as well as the ranges of amounts of these components, is not disclosed by this Example.

With respect to the method of claim 16, it is noted that WO'556 is silent concerning a method of forming a reduced lead content aviation gasoline by taking an existing aviation gasoline and blending it with iso-octane, and, optionally, toluene, to arrive at the recited reduced lead content aviation gasoline composition. The use of an aviation gasoline which contains lead according to new claim 25 is also not taught by WO'556. Accordingly, the method of claims 16-20, 24 and 25 is not anticipated for this reason as well.

Applicants further note that WO'556 refers to the inclusion of ether compounds such as MTBE and does not disclose the features of new claims 26-29.

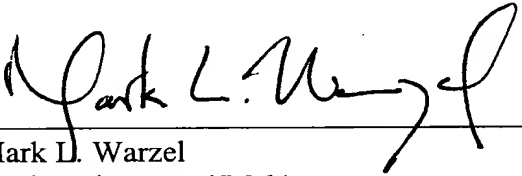
For at least the foregoing reasons, the claims are patentable over WO'556. Withdrawal of the rejections under 35 U.S.C. § 102 is requested.

Further and favorable action in the form of a Notice of Allowance is believed to be next in order, and such action is earnestly solicited.

If any issues remain outstanding, or if the Examiner has any questions concerning the foregoing, a telephone call to the undersigned would be appreciated.

Respectfully submitted,

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Attachment to Reply and Amendment filed August 23, 2002
Marked-up Version of Claims 16-20

In the Specification:

Page 7, the paragraph beginning at line 11 is amended as follows:

The phrase "high motor octane number" is intended to refer to motor octane numbers (MON) which are preferably greater than about 98 and more preferably greater than or equal to about 100. It is preferred that the Avgas composition of the present invention possess a MON which is greater than about 98 and more preferably greater than or equal to about 100.

In the Claims:

16. (amended) A method of preparing a reduced lead content aviation gasoline composition while maintaining a high motor octane number comprising,

blending an aviation gasoline composition with iso-octane, and, optionally, toluene,

wherein, the reduced lead content aviation gasoline composition comprises about 20 to about 80 vol% iso-octane, about 5 to about 18 vol% toluene, about 1 to about 20 vol% C₄ to C₅ paraffins, about 0 to about 1 ml tetraethyl lead/gallon of said reduced lead content aviation gasoline composition and the balance comprising light alkylate.

17. (amended) The method of claim 16, wherein the motor octane number of the reduced lead content aviation gasoline is at least about 98.

18. (amended) The method of claim 16, wherein the motor octane number of the reduced lead content aviation gasoline is at least about 100.

19. (amended) The method of claim 16, wherein the reduced lead content aviation gasoline comprises about 30 to about 70 vol% iso-octane.

20. (amended) The method of claim 16, wherein the reduced lead content aviation gasoline comprises about 40 to about 60 vol% iso-octane.